

Appl. S.N. 09/683,111

Amdt. Dated Feb. 17, 2005

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Reply to Office Action of Nov. 17, 2004

BEST AVAILABLE COPYREMARKS/ARGUMENTS

This amendment is responsive to the Office Action mailed Nov. 17, 2004 wherein claims 10-19 were rejected under 35 USC §112, second paragraph, for being indefinite; claims 1-4, 8-11, 14, 16-23, 45-49, 51, and 55-58 were rejected under 35 USC §102 (b) as being anticipated by Matthew S. Brown et al., "Method For Segment Chest CT Image Data Using An Anatomical Model: Preliminary Results", IEEE Transactions in Medical Imaging, Vol. 16, No. 6, December 1997, pp. 828-839 (hereinafter "Brown reference"); claims 5, 7, 12, 13, 24-33, 35-37, 39, 40 and 42-44 were rejected under 35 USC §103 (a) on the Brown reference in view of Tewari et al. (US 6,004,267); claims 15 and 50 were rejected under 35 USC §103 (a) over the Brown reference in view of Gray (US 5,437,279); and claim 38 was rejected under 35 USC §103 (a) over the Brown, Tewari and Gray references; and claims 52-54 were rejected under 35 USC §103 (a) over the Brown reference in view of Teshima et al. (US 6,272,470). In this amendment, claims 1-9, 12 and 24 were canceled and claims 10, 20 and 45 were amended. No new matter has been added.

Claims 10-11, 13-23, and 25-58 remain pending in this application. Reconsideration in light of the above amendments and the following remarks is respectfully requested.

Claim 10 has been amended to recite "classifying step" in place of "competing step" in order to correct a typographical error and to be more definite. Claim 10 has also been amended to include the subject matter of claim 12. Applicants respectfully submit the amendments to claim 10 have overcome the rejection under 35 USC §112, second paragraph. Claims 11 and 13-19 depend from claim 10. Withdrawal of the rejection under 35 USC §112 is respectfully solicited.

Claim 20 has been amended to incorporate the subject matter of claim 24 and now recites "grouping regions in the image into anatomical structures, wherein the grouping of regions into anatomical structures is performed by Bayesian competition in accordance with the hierarchy of anatomical models". Claim 45 has been amended to recite "a processor adapted to process the image data sets and to classify selected tissue types within the image data sets by grouping regions in the image data sets into anatomical structures, wherein the grouping of regions into anatomical structures is performed by Bayesian competition in accordance with a hierarchy of signal and anatomical models and the processor is further adapted to differentiate anatomical context of the classified tissue types for use in the diagnosis and detection of disease". No new matter has been added.

The rejection of claims 1-4, 8-11, 14, 16-23, 45-49, 51 and 55-58 under 35 USC §102 (b) on the Brown reference is respectfully traversed. Claims 1-9 have been canceled without prejudice. The present invention, as claimed in amended independent claims 10, 20 and 45, and

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claims depending therefrom, is patentable over the Brown reference. "Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." W.I. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 313 (Fed. Cir. 1983).

The Brown reference does not disclose each element of the present invention as claimed in claims 10, 20 and 45. Specifically, the present invention claims grouping regions within an image or image data set wherein the grouping is performed using Bayesian competition in accordance with a hierarchy of anatomical structures to differentiate tissue types. The Brown reference does not teach or suggest the recited Bayesian competition. The Brown reference instead teaches segmentation of lung images to segment or identify lesions and nodules, and more particularly discloses segmentation based on anatomical models indicative of the expected tissue types such as chest wall and typical lung nodule size/shape. The Brown reference does not show a grouping or comparing step using Bayes Factor or Bayesian competition as recited independent claims 10, 20 and 45. Therefore, the present invention, as claimed in Claims 10, 20 and 45 is not anticipated by the Brown reference. Claims 11, 13-19, 21-23, and 46-58 depend directly or indirectly from claims 10, 20 and 45, respectively. Accordingly, Applicants submit that claims 11, 14, 16-19, 21-23, and 46-49, 51 and 55-58 are allowable by dependency.

Therefore, as stated above, the present invention, as claimed in Claims 10, 20 and 45, as amended, are patentable over the Brown reference. Thus, it is respectfully requested that the rejection of Claims 10-11, 14, 16-23, 45-49, 51 and 55-58 under 35 USC §102 (b) on the Brown reference be withdrawn.

Applicants respectfully traverse the rejection under 35 USC §103 (a) of claims 5, 7, 12, 13, 24-33, 35-37, 39, 40 and 42-44 were rejected over the Brown reference in view of Tewari et al. Claims 5 and 7 have been canceled and therefore the rejection has been obviated. Claim 12 has been incorporated into independent claim 10 and claim 24 has been incorporated into claim 20. Applicants respectfully submit that the present invention as recited in independent claims 10, 20 and 35 are not obvious in view of the Brown and Tewari references. In order to establish a *prima facie* case of obviousness, there must be some motivation or suggestion to combine the references. In each of claims 10, 20 and 35 the present invention recites a identifying suspicious regions based on a hierarchy and Bayesian competition. The Brown reference merely discloses an anatomical models but does not disclose or suggest a Bayesian competition framework as specifically recited in Applicants' claims. The Tewari reference does not overcome the deficiencies of the Brown reference. Although the Tewari reference does disclose probalistic neural networks based on Bayes decision theorem, nowhere does the Tewari reference show or disclose a Bayesian competition as recited in Applicants' claims and described in Applicants' specification. The fact that two references can be combined is not sufficient or proper to establish

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a *prima facie* case of obviousness. Neither reference shows or discloses a Bayesian competition. There must be some basis for combining the references and the references must be taken as a whole. Applicants' respectfully submit that there is no reasonable basis for combining the anatomical models of the Brown reference with the Bayes decision calculation of Tewari since there is no suggestion or disclosure of a Bayesian competition in either reference, taken alone or in any reasonable combination. Thus, Applicants' respectfully submit that no reasonable combination of the Brown and Tewari references would make Applicants' recited invention obvious.

Therefore, Applicants' respectfully submit that claims 10, 13, 20, 24-33, 35-37, 39, 40 and 42-44 are allowable and requests that the rejections under 35 USC §103 (a) be withdrawn.

Applicants respectfully traverse the rejection of claims 15 and 50 under 35 USC §103 (a) over Brown in view of Gray. Claims 15 and 50 depend from claims 10 and 45, respectively. As discussed with reference to the rejection under section 102, Applicants' recited invention as presented in independent claims 10 and 45 is not anticipated by the Brown reference. The Gray reference does not overcome the deficiencies of the Brown reference. Gray merely discloses a user interface. Applicants respectfully submit that claims 15 and 50 are allowable by dependency and are not obvious by any combination of Brown and Gray. Withdrawal of the rejections of claims 15 and 50 under 35 USC §103 (a) are respectfully solicited.

Applicants respectfully traverse the rejection of claim 38 under 35 USC §103 (a) over the Brown, Tewari and Gray references since as outlined above, neither of the applied references taken alone or in combination, show or suggest the Bayesian competition as recited in claim 35 from which 38 depends. Withdrawal of the rejection of claim 38 under 35 USC §103 (a) is respectfully solicited.

Applicants respectfully traverse the rejection of claims 52-54 under 35 USC §103 (a) over the Brown and Teshima references is similarly traversed. As discussed with reference to the rejection under section 102, Applicants' recited invention as presented in independent claim 45, from which claims 52-54 depend, is not anticipated by the Brown reference. The Teshima reference does not overcome the deficiencies of the Brown reference. Teshima merely discloses a medical image management system. Applicants respectfully submit that claims 52-54 are allowable by dependency and are not obvious by any combination of Brown and Teshima. Withdrawal of the rejections of claims 52-54 under 35 USC §103 (a) are respectfully solicited.

In view of the foregoing amendment and for the reasons set out above, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration


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and prompt allowance of the application are respectfully requested.

Should the Examiner believe that anything further is needed to place the application in condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number below.

Respectfully submitted,


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Feb. 17, 2005

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